

# Insight Integration of the Tivoli Enterprise Console (TEC) with HP Integrity Servers



August 2003 (First Edition)  
Part Number 349142-001

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## Introduction

This document discusses the support for HP Integrity Superdome systems and the Tivoli Enterprise Console (TEC). For more information, please visit [www.hp.com/servers/integration](http://www.hp.com/servers/integration).

## Product Description

For companies who implement HP servers and the Tivoli Enterprise Console (TEC) as key elements of their IT infrastructure, the Insight Integration for TEC is a comprehensive solution that simplifies systems management by integrating SNMP events and status indications for HP ProLiant, AlphaServer and Integrity Superdome servers into the Tivoli Enterprise Console, and enables direct access to HP systems management tools.

The Insight Integration builds upon the functionality of the Insight Management Agents, and works with native Tivoli services to provide the most manageable platform for TEC across a wide range of host and managed operating platforms. This enables systems administrators to manage events for HP server and storage hardware in addition to other enterprise resources from a common Tivoli Enterprise Console. Supported operating platforms for host and managed systems include HP-UX, SUN Solaris, IBM AIX, Microsoft Windows 2000/NT, Novell NetWare, Linux, HP Tru64 UNIX, and HP OpenVMS.

Additional data for individual HP servers is available through an integrated browser launch to the HP Systems Management Homepage, which provides access to HP web-based management tools such as the Insight Management Agents, Version Control Agents, System Diagnostics and Survey from the Tivoli Desktop and TEC console.

For advanced remote management and deployment of ProLiant systems, a link to the Remote Insight Lights Out Edition (RILOE) and Integrated Lights Out (iLO) solutions are also available through the Systems Management Homepage and Insight Management Agents.

For situations where broader lifecycle management is needed for groups of HP servers and storage solutions, the Insight Integration for TEC includes application launches to Insight Manager 7 and the agents associated with the HP Storage Management Appliance.

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## What's New in Revision 2.0

- New modular design for simplified installation and operations
- Re-branding to the new HP standard
- Updated SNMP event support for HP servers and storage solutions, based on definitions delivered with Insight Management Agents 6.40, for HP ProLiant, Alphaserver and Integrity Superdome servers
- Installation and operations support for Tivoli Framework 4.1 and TEC 3.8
- Tivoli Class Definition Statement Files (.CDS) and corresponding BAROC class definitions updated to include over 700 HP SNMP events for TEC
- New HP Knowledgebase containing facts and rules (PROLOG) for the TEC rule engines
- HP rules can be customized to suite individual requirements
- Expanded rules for Tivoli event servers (over 350) with automated correlation
- Tasks to launch Insight Manager 7, the Insight Management Agents homepage, and the agents associated with the HP Storage Management Appliance from the Tivoli Enterprise Console (v3.7 and 3.8)
- Simplified user documentation

## Product Features

- Designed for use with Tivoli Enterprise Console 3.6.x, 3.7.x, and 3.8
- Installs into all tier-1 Tivoli platforms (HP-UX, AIX, Solaris, Windows) running Tivoli Framework v3.6.x through v4.1
- Custom tasks to configure the Tivoli SNMP Adapter and Tivoli Event Server to receive and translate HP SNMP notifications as TEC events
- More than 700 SNMP traps defined for HP ProLiant, Alphaserver, and Integrity Superdome servers, and HP storage platforms
- Translates and displays SNMP events from all Tivoli Managed Nodes and Endpoints that have Insight Management Agents installed, including Windows NT/2000, NetWare, Linux, Tru64 and Open VMS
- Automated event correlation with over 350 pre-defined rules
- Embedded tasks to launch Insight Manager 7, Insight Management Agents and the HP Storage Management Appliance from the Tivoli Desktop and Tivoli Event Console
- Comprehensive documentation

## Availability

The Insight Integration for TEC is easy to obtain by registering and downloading through <http://www.hp.com/servers/integration>

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## HP Hardware Support

The Insight Integration has been developed to install and operate on HP ProLiant, AlphaServer and Integrity Superdome servers, configured as Tivoli TMR and Managed Node systems on supported UNIX and Windows platforms, including HP-UX, Windows 2000 /NT, and Solaris, and as Tivoli Endpoint devices on platforms that support Tivoli and HP Insight Management Agents, including Windows 2000/NT, NetWare, and Linux. For a more complete listing of Endpoint platform support, refer to the “HP Insight Management Agent Platforms” section.

## HP Insight Management Agent Platforms

The following lists all platforms supported by Insight Management Agents and the Insight Integration as managed Tivoli Endpoint systems:

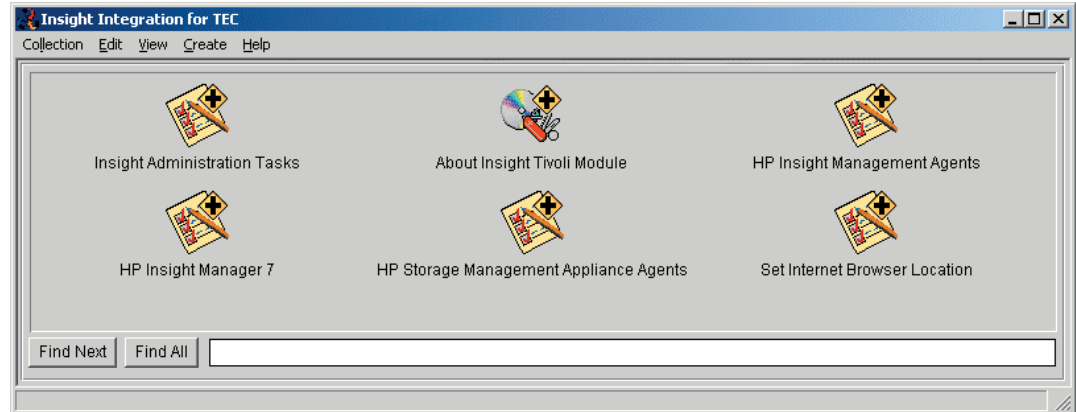
- Windows 2000
- Windows NT 4.0 SP6
- NetWare 5.x or later
- HP Tru64 Unix 4.0F and later
- HP OpenVMS 7.1 and later
- UnixWare 7 or later and Open UNIX 8
- Linux – Red Hat, SuSE, United Linux 1.0
- OS/2 Warp Version 4

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## Insight Integration Groups and Tasks

The Insight Integration for TEC provides the following groups and tasks for configuration and operations with the Tivoli Enterprise Console, as shown in the figure below.

Further details on using each task are provided in Chapter 2, “*Installing the Insight Integration for TEC*,” and Chapter 3, “*Using the Insight Integration for TEC*.”



**Figure 1: Insight Integration for TEC**

- **Insight Administration Tasks**—Predefined tasks for configuring the TEC SNMP Adapter and the TEC Event Server with HP Insight event definitions, classes, rules and filters.
- **About Insight Tivoli Module**—Displays revision details for the installed Insight Integration for TEC.
- **Set Internet Browser Location**—A predefined task to configure the browser environment for the Insight Integration, so that HP management tools can be launched directly from the Tivoli Desktop and Event Console.
- **HP Insight Management Agents**—Embedded task to launch the systems management homepage of the web-based Insight Management Agents on a specified ProLiant server. Provides in-depth hardware configuration and subsystem status data.
- **HP Insight Manager 7**—Embedded task to launch the browser based Insight Manager 7 application, for lifecycle management of the HP hardware infrastructure.
- **HP Storage Management Appliance**—Embedded task to launch the agents associated with the HP OpenView Storage Management Appliance for advanced storage management and administration



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## TEC Components and Insight Integration

Operation of the TEC relies on the following three major components.

### Event Adapters

Tivoli event adapters gather data from managed resources in the TME. Event adapters allow TEC to retrieve events from a variety of sources, including the Windows Event Log, SNMP messages, log files, and other management platforms such as Tivoli NetView or HP OpenView.

The HP Insight Integration for TEC provides pre-defined event object definitions and classes (.cds and .oid files) for over 700 events that integrate with both non-TME and TME Adapter Configuration Facility (ACF) SNMP adapters. This enables events generated by HP Insight Management Agents and storage agents to be translated, prioritized, and clearly displayed in the Tivoli Enterprise Console. Detailed configuration procedures for both adapters are described in this chapter.

### Event Server

The Event Server is a central system that arbitrates all SNMP events in the distributed environment and delivers updates to the TEC. It creates an entry in the Tivoli database for each incoming event and evaluates each one against a set of rules to determine how to respond. Using an event rule base, administrators can automate common tasks and actions based on incoming events.

The HP Insight Integration for TEC provides a comprehensive set of BAROC (Basic Recorder of Objects in C) event class definitions and over 350 pre-defined rules. These classes and rules enable automated processing and correlation of events generated by HP Insight Management Agents and storage agents, and can be easily customized to suite individual TME requirements. Detailed configuration procedures are described in this chapter.

### Event Consoles

The Event Console is a graphical user interface that displays incoming events received at the Event Server. Multiple Event Consoles can be configured within a single TME as required.

System administrators can use the Event Console to retrieve, filter, and correlate incoming events or to escalate SNMP traps to other Event Consoles for further processing.

The Insight Integration for TEC displays SNMP events for HP servers and storage platforms using variety of Tivoli Enterprise Console versions. This enables system administrators to simplify IT operations procedures by viewing and managing events for their hardware infrastructure, operating systems, and application platforms from within a common TEC interface.

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## Overview

The integration of HP SNMP events into the Tivoli Enterprise Console provides valuable hardware status and event information that helps simplify the systems management environment, enabling administrators to proactively manage HP hardware with other enterprise resources from a common Tivoli Enterprise Console.

The HP Insight Integration for TEC includes BAROC event class definitions and rules to correlate over 350 SNMP events. These classes and rules integrate closely with the Tivoli Enterprise Console application, allowing HP SNMP events to be identified, processed, translated, and clearly displayed in the TEC console by the native Tivoli services. Although pre-defined to correlate a wide variety of common event conditions, the HP rules can be easily customized to suite individual TME requirements.

The following sections illustrate practical uses of this functionality to help identify potential and real problems, and procedures for gathering additional in-depth hardware data using HP management tools such as Insight Manager 7 and the Insight Management Agents.

# Managing Insight Events in the Tivoli Enterprise Console

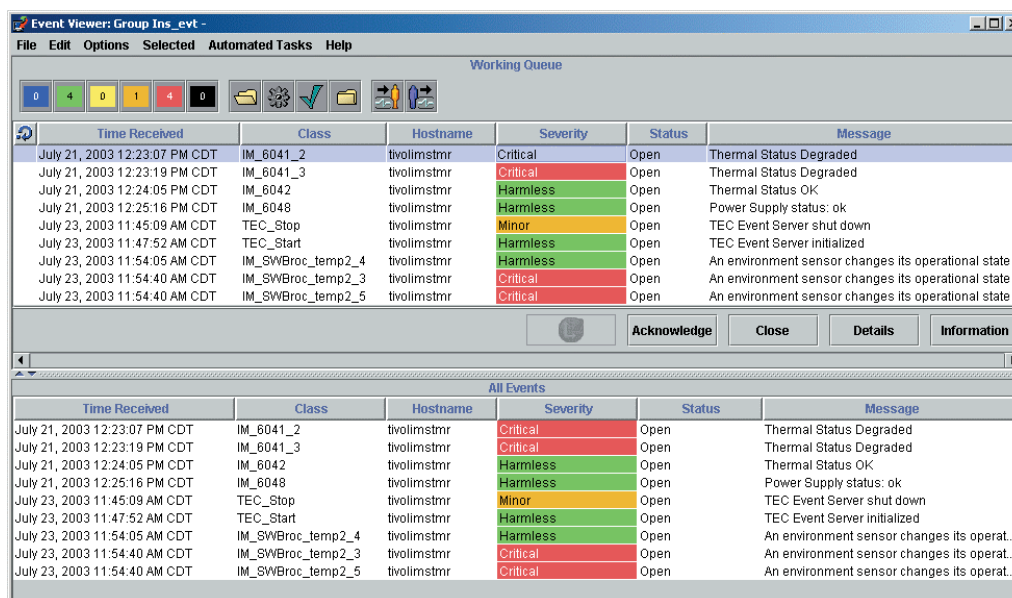
The HP Insight Integration for TEC provides a comprehensive set of BAROC event class definitions and rules to correlate over 350 events. These classes and rules enable SNMP events generated by HP Insight Management agents and storage agents to be correctly identified, processed and displayed by the TEC console in a translated format, and help automate the correlation of common system conditions.

The following sections describe how HP SNMP events are displayed and managed in the Tivoli Enterprise Console.

## Viewing Insight Events

HP SNMP events are presented in the TEC console using translated message text and corresponding color-coded severity level indicators. This enables administrators to quickly identify root cause and prioritize based on the level of criticality.

The example in the figure below shows a TEC v3.7 Event Console with a highlighted event indicating a Critical alert on the system Tivolimstmr that relates to a Thermal Status Degraded condition.



The screenshot shows the 'Event Viewer: Group Ins\_evt' window. It features a menu bar (File, Edit, Options, Selected, Automated Tasks, Help) and a toolbar with icons for filtering and actions. Below the toolbar is a 'Working Queue' section with a table of events. The table has columns: Time Received, Class, Hostname, Severity, Status, and Message. The first row is highlighted in blue. Below the table are buttons for Acknowledge, Close, Details, and Information. At the bottom, there is a section for 'All Events' with a similar table.

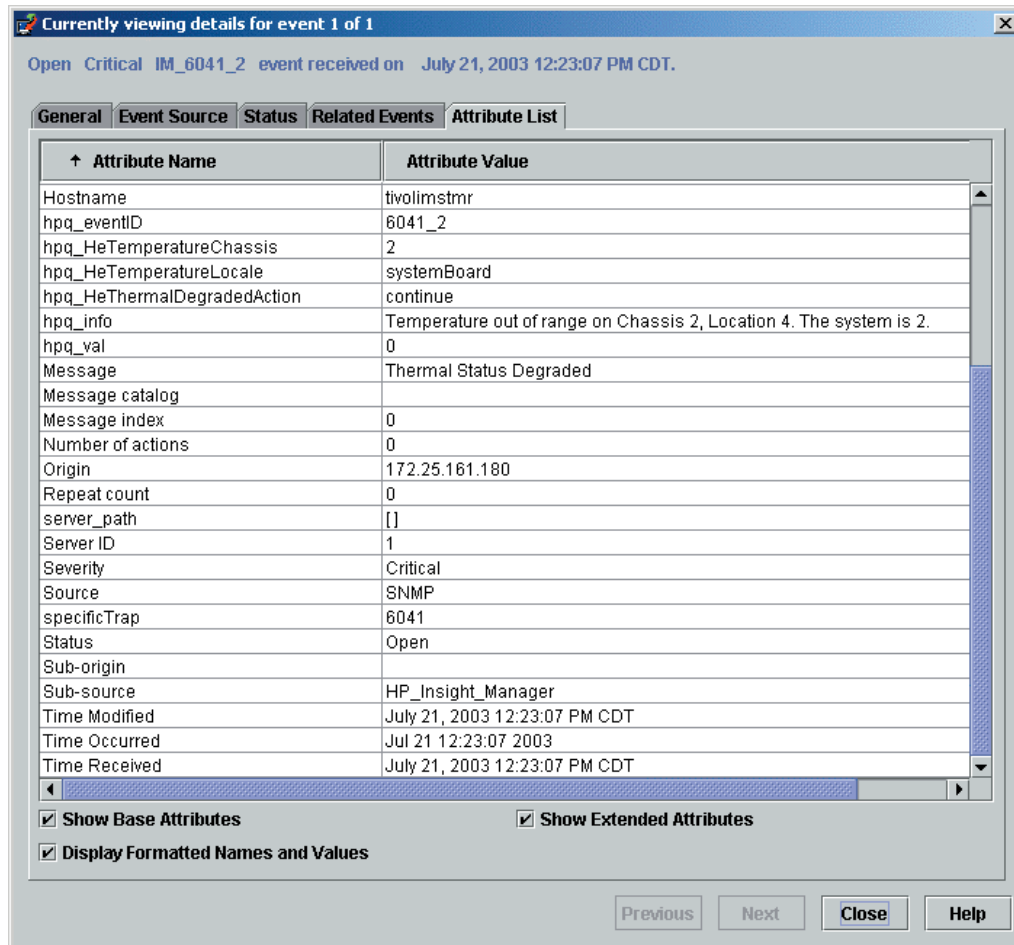
Time Received	Class	Hostname	Severity	Status	Message
July 21, 2003 12:23:07 PM CDT	IM_6041_2	tivolimstmr	Critical	Open	Thermal Status Degraded
July 21, 2003 12:23:19 PM CDT	IM_6041_3	tivolimstmr	Critical	Open	Thermal Status Degraded
July 21, 2003 12:24:05 PM CDT	IM_6042	tivolimstmr	Harmless	Open	Thermal Status OK
July 21, 2003 12:25:16 PM CDT	IM_6048	tivolimstmr	Harmless	Open	Power Supply status: ok
July 23, 2003 11:45:09 AM CDT	TEC_Stop	tivolimstmr	Minor	Open	TEC Event Server shut down
July 23, 2003 11:47:52 AM CDT	TEC_Start	tivolimstmr	Harmless	Open	TEC Event Server initialized
July 23, 2003 11:54:05 AM CDT	IM_SWBroc_temp2_4	tivolimstmr	Harmless	Open	An environment sensor changes its operational state
July 23, 2003 11:54:40 AM CDT	IM_SWBroc_temp2_3	tivolimstmr	Critical	Open	An environment sensor changes its operational state
July 23, 2003 11:54:40 AM CDT	IM_SWBroc_temp2_5	tivolimstmr	Critical	Open	An environment sensor changes its operational state

**Figure 2: Tivoli Enterprise Console**

To obtain additional information, click on the highlighted event to display the events details window shown in the figure below.

Under the Attributes tab, further event details can be quickly identified as follows:

- Under the hp\_info entry in the Attribute Name column, the corresponding data in the Attribute Value column provides a more detailed explanation of the event.
- Under the Message entry in the Attribute Name column, the corresponding data in the Attribute Value column verifies the status level.
- Under the specific Trap entry in the Attribute Name column, the corresponding data in the Attribute Value column provides the SNMP event ID.
- Under the Sub-source entry in the Attribute Name column, the corresponding data in the Attribute Value column identifies that the event was generated by HP management agents.

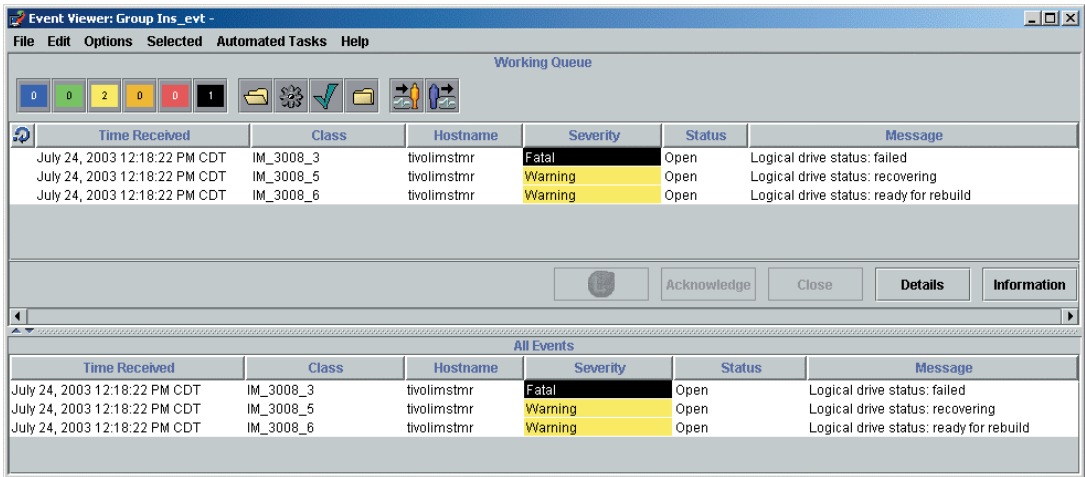


**Figure 3: Event Attribute Details**

# Event Correlation

The HP Insight Integration for TEC provides rules to correlate over 350 SNMP events. These rules enable automated processing and correlation of SNMP events generated by HP Insight Management Agents and storage agents, and can be easily customized to suite individual TME requirements.

As an example of this functionality, the following figure displays a TEC v3.7 console with a Fatal event on the system Tivolimstmr. The event data indicated a failed hard drive in a RAID Array, and two (2) Warning events for the related logical drive.



The screenshot shows the 'Event Viewer: Group Ins\_evt' window. It features a 'Working Queue' section at the top with a table of events. Below this is an 'All Events' section with another table. Both tables list events for 'Tivolimstmr' on 'July 24, 2003 12:18:22 PM CDT'. The first event is 'Fatal' (IM\_3008\_3) with status 'Open' and message 'Logical drive status: failed'. The second event is 'Warning' (IM\_3008\_5) with status 'Open' and message 'Logical drive status: recovering'. The third event is 'Warning' (IM\_3008\_6) with status 'Open' and message 'Logical drive status: ready for rebuild'. The interface includes a menu bar (File, Edit, Options, Selected, Automated Tasks, Help) and a toolbar with various icons.

Time Received	Class	Hostname	Severity	Status	Message
July 24, 2003 12:18:22 PM CDT	IM_3008_3	tivolimstmr	Fatal	Open	Logical drive status: failed
July 24, 2003 12:18:22 PM CDT	IM_3008_5	tivolimstmr	Warning	Open	Logical drive status: recovering
July 24, 2003 12:18:22 PM CDT	IM_3008_6	tivolimstmr	Warning	Open	Logical drive status: ready for rebuild

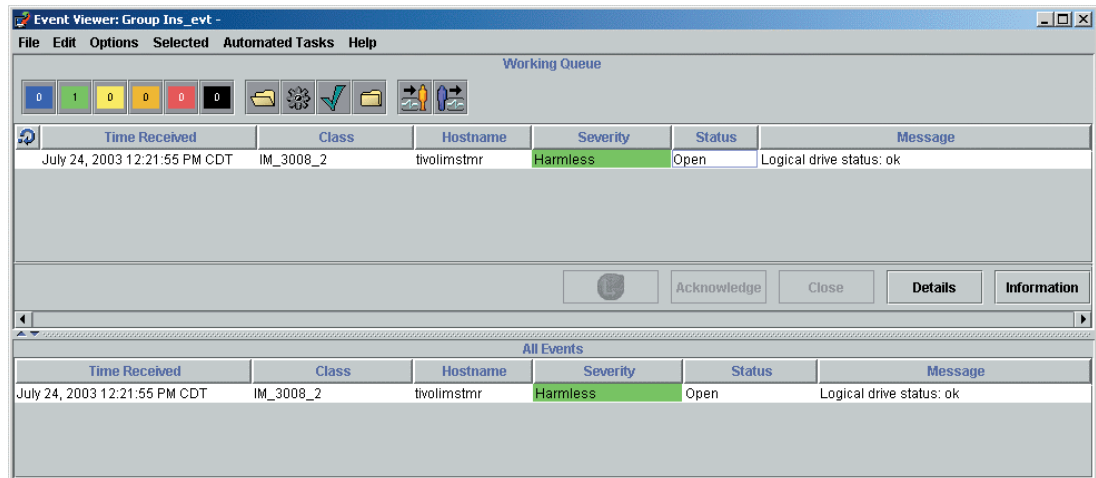
  

Time Received	Class	Hostname	Severity	Status	Message
July 24, 2003 12:18:22 PM CDT	IM_3008_3	tivolimstmr	Fatal	Open	Logical drive status: failed
July 24, 2003 12:18:22 PM CDT	IM_3008_5	tivolimstmr	Warning	Open	Logical drive status: recovering
July 24, 2003 12:18:22 PM CDT	IM_3008_6	tivolimstmr	Warning	Open	Logical drive status: ready for rebuild

**Figure 4: Fatal and Warning Events**

When the failed drive is replaced, the automatic recovery process associated with the HP RAID Array hardware will commence, and the Insight Management Agents will generate additional events indicating that the logical drive is rebuilding.

When the rebuild is complete, a final event will be generated indicating that the Logical drive status is OK, as shown in figure below, and the HP rules will automatically close the preceding events related to the drive failure.



**Figure 5: Logical Drive OK**

## Launching HP Web-Based Management Tools

The Insight Integration for TEC installs several tasks to invoke selected HP web-based management tools from the Tivoli Desktop and the TEC Console. This feature enables administrators to directly access additional hardware configuration information, status data, and lifecycle management tools for HP servers and storage platforms from within the Tivoli environment.

These tools include HP Insight Manager 7, the Systems Management Homepage of the HP Management Agents, and the agents associated with the HP Storage Management Appliance.

The procedures for launching the HP browser tasks from both the Tivoli Desktop and TEC console are described in the following sections.

**NOTE:** To enable the HP browser tasks, you must first configure the browser environment for the Insight Integration environment. See "Configuring HP Browser Tasks" in Chapter 2 of this guide.

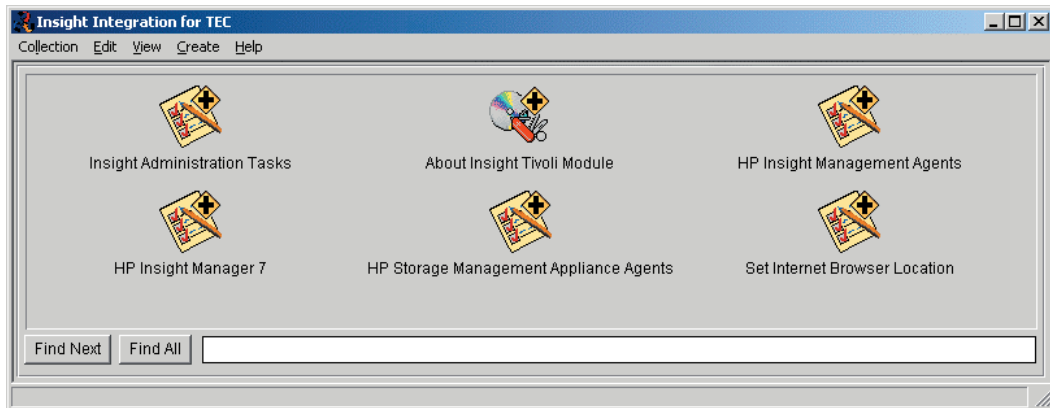
## Launching From the Tivoli Desktop

The Insight Integration for TEC installs three (3) tasks on the Tivoli Desktop to launch HP Insight Manager 7, HP Management Agents and the agents associated with the HP Storage Management Appliance, as shown in the figure below.

For each task you must input the name or IP address of the target server. When the task executes it invokes the chosen browser application, and links to the target device. The HP tasks amend the appropriate secure access port for each management tool as follows:

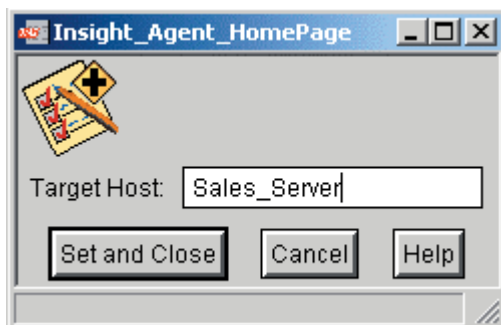
- HP Insight Manager 7 – Port 50000
- HP Management Agents – Port 2381
- HP Storage Management Appliance – Port 2381

The following example demonstrates how to launch and display the Homepage for the HP Insight Management Agents on the device named Sales\_Server.



**Figure 6: Insight Integration for TEC Window**

From the Insight Integration for TEC Window, double-click the **HP Insight Management Agents** task. The Insight\_Agent\_Homepage window is displayed as shown in the figure below.



**Figure 7: Insight\_Agent\_Homepage Window**

In the Target Host field, input the name of the target system. In this example we are using the name Sales\_Server

Click **Set and Close** to complete task. This will invoke the browser application and amend the secure HP port address 2381 to the specific server name or IP address.

As indicated in the following figure, the Systems Management Homepage for the Sales\_Server device displays showing the Insight Agents summary data.

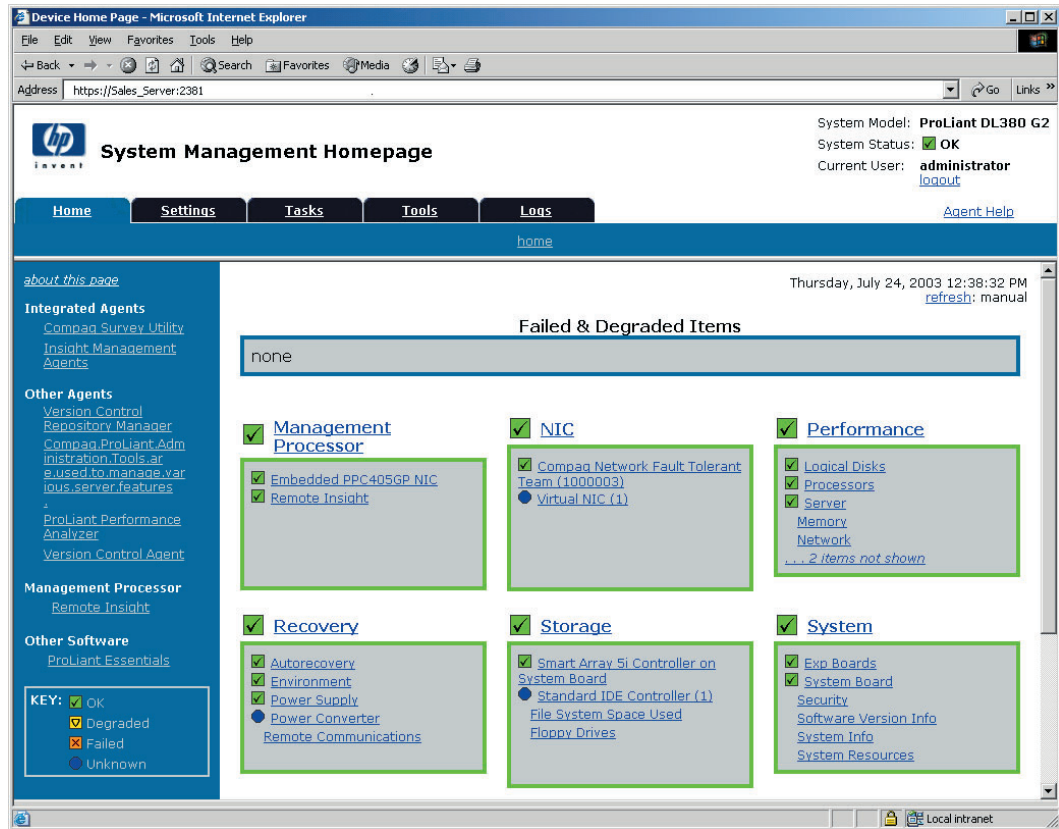


Figure 8: Systems Management Homepage

## Launching From the TEC Console

From a selected HP event in the TEC console, right click the event entry to display the drop down menu, as shown in the figure below.

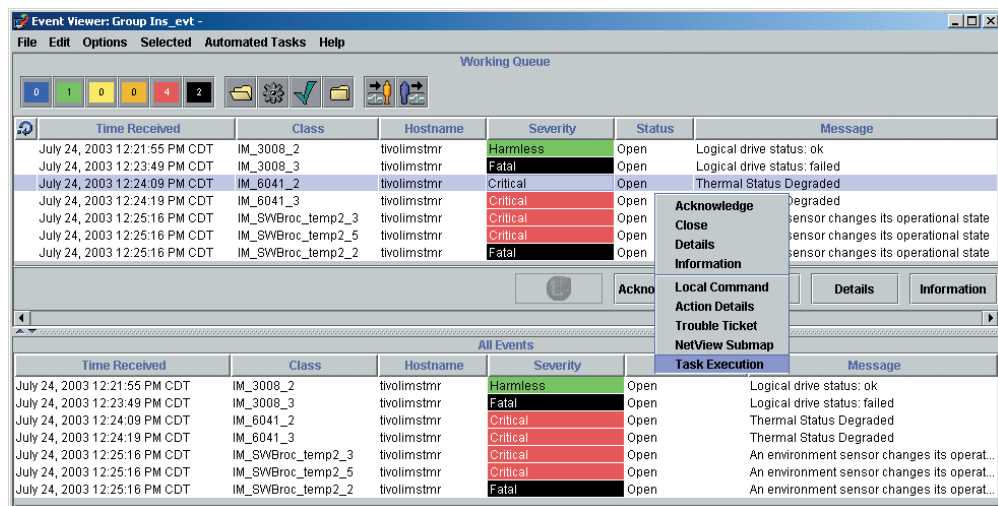
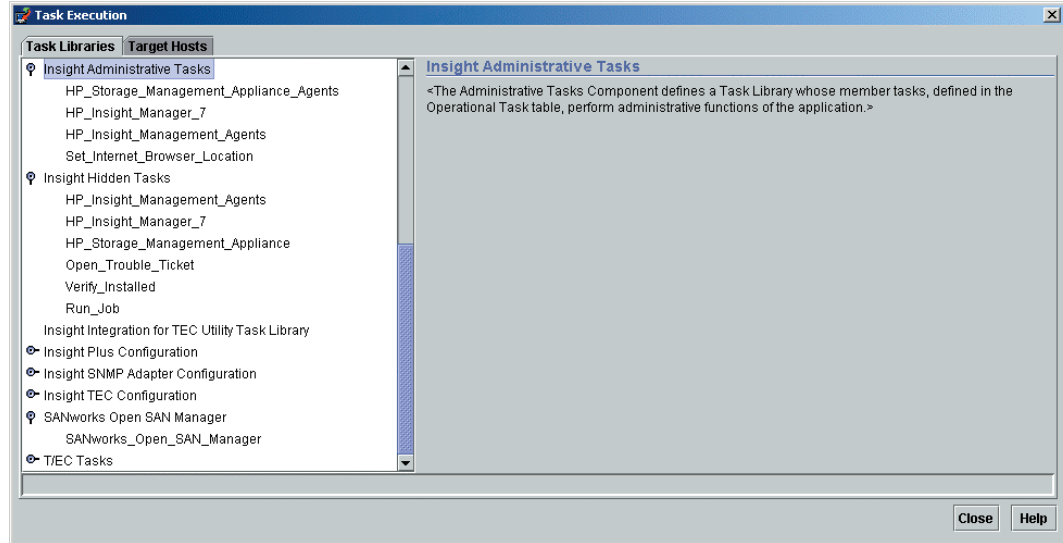


Figure 9: TEC Task Execution



Select the Task Execution option to display the Task Execution window shown in the figure below.

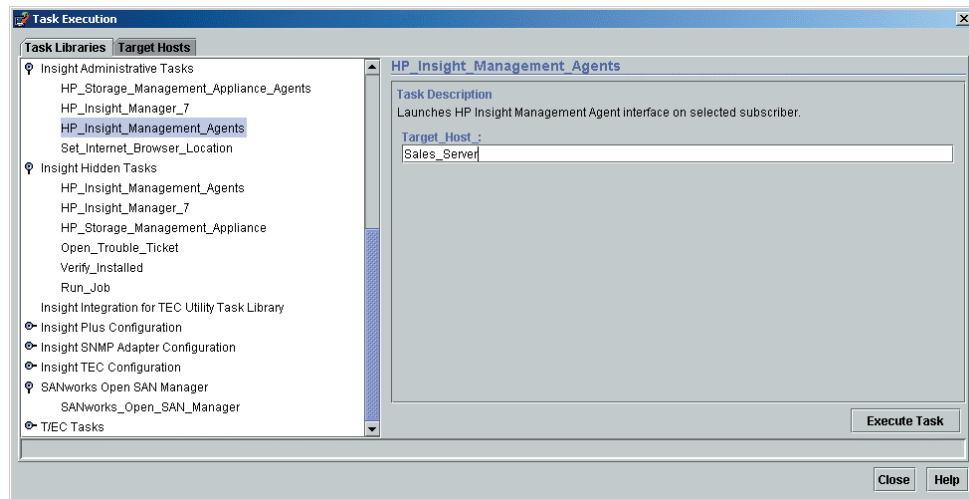
The Task Hosts tab lists the available executable tasks, which includes several associated with the HP Insight Integration for TEC.



**Figure 10: Task Execution Window**

The following example demonstrates how to launch and display the Homepage for the HP Management Agents on the device named Sales\_Server.

- Highlight the HP\_Insight\_Management\_Agent task under the Target Hosts tab
- In the Target\_Host field enter name of the target server or related IP address, as shown in the figure below.



**Figure 11: Launching HP Insight Management Agents Task**

Click the **Execute Task** button to complete task. This will invoke the browser application and amend the secure HP port address 2381 to the specific server name or IP address.

As indicated in the figure below, the Systems Management Homepage for the Sales\_Server device displays showing the Insight Agents summary data.

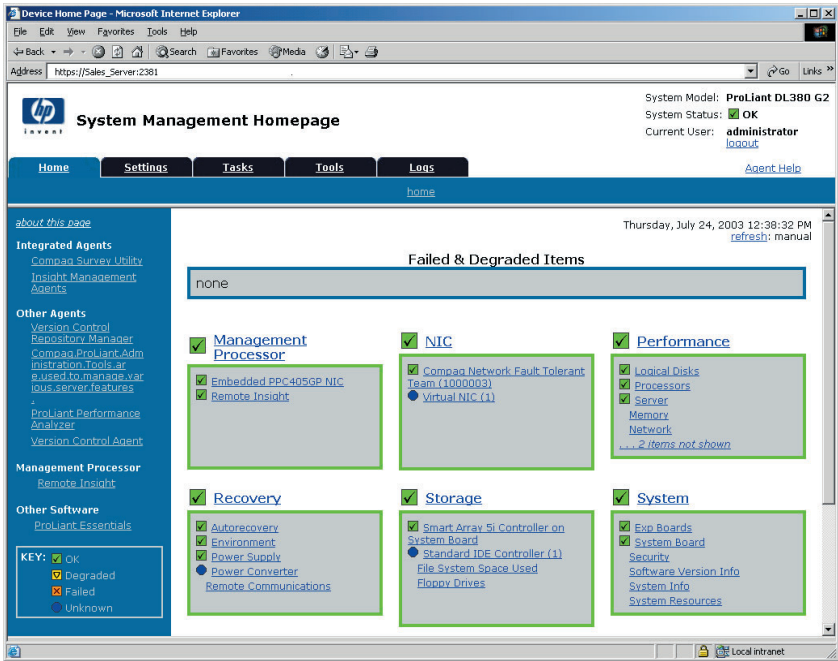


Figure 12: HP Systems Management Homepage